pillars of brass. The upper room has a greater roof, and the middle tower of the front is unfinished. Herod's fortress, Antonia, has taken the place of the old strong place on the northwest. This temple was destroyed by the Romans.

Equally interesting is the model of the great Christian Church of St. Mary, built in the reign of the Emperor Justinian and known as Justinian's Church. A detailed description of the model is unnecessary here. Dr. Schick was of the opinion that it was erected on the foundations of the temple of Jupiter, built in the second century by Hadrian. The fourth model, Haram Es-Cherif, shows Mount Moriah, the site on which the preceding temples have been built, as it is to-day. It will be seen that a beautiful mosque has taken the place of Justinian's church. The first building within the inclosure is the Aksa mosque, and close to it the mosque for the women, once the armory of the Knights Templars. The great mosque shows traces in its architecture of all the phases of ownership it has seen—Byzantine, Crusader, and Saracen.

As could only be expected, the models have caused a great deal of discussion in archæological circles. It is impossible to know in certain instances the exact architecture of the buildings, but all are agreed that Dr. Schick's models represent with marvelous ingenuity and faithfulness the great and ancient worshiping places that have stood upon the famous temple site at Jerusalem. They undoubtedly show great intelligence, patient industry, and profound scholarship. Dr. Schoenecke, the present owner of the models, is always pleased to show them to visitors to Jerusalem, and many Americans have expressed interest in them.

London, S. W.

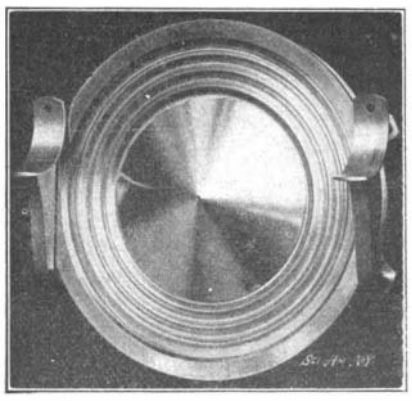
A "SCIENTIFIC" VIOLIN.

BY H. C. FYFE.

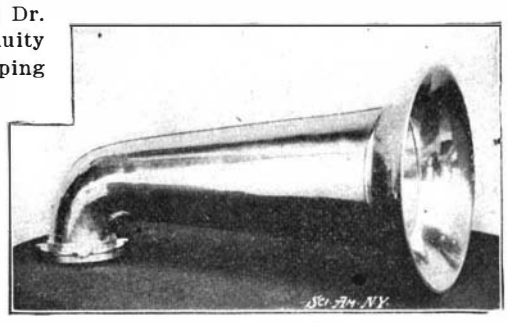
Mr. Augustus Stroh, a well-known London man of science and inventor, has lately brought out an entirely new kind of violin, of which some photographs are given on this page. On looking at the instrument, the first thing that strikes one is the fact that there is no sounding box, and that instead of this feature of the violin, hitherto considered indispensable, there is a metal trumpet or resonator and a diaphragm also composed of a metal substance. Mr. Stroh's object was to turn out a violin which should equal in quality of tone the fine old instruments of the classic makers and should be in every respect as beautiful an instrument, so far as sound was concerned, as the fiddles of Amati or Stradivarius.

The ordinary, common form of violin consists, as everybody knows, of the strings, the bridge and the sounding box or body. It was thought that all string instruments must have a sounding box, which would be set in sympathetic vibration with the strings of resonance if any considerable effect was to be attained, and the maker of violins showed his skill by the manner in which he made his sounding box. The body required special wood, special varnish, etc., and in the construction of violins the great Cremona makers have for long held first place.

The violinist had to pay a high price for one of their instruments, but he knew that it could not be equaled by any other modern maker. Mr. Stroh having given much attention to musical instruments, decided to abolish the "body" or sounding box of the violin and to substitute for it a trumpet or resonator made of aluminium. The following description, together with the photographs here reproduced, will give a good idea of the construction of the Stroh violin. The vibrations of the strings are conducted by means of an ordinary violin bridge, which rests upon a rocking lever, to a diaphragm and resonator. The lever supporting the bridge oscillates laterally upon the body of the instrument, each being attached to a diaphragm of aluminium by a small connecting link. The diaphragm is held in position between two india rubber cushions by means of a specially designed holder fixed upon the body of the violin by two brackets.

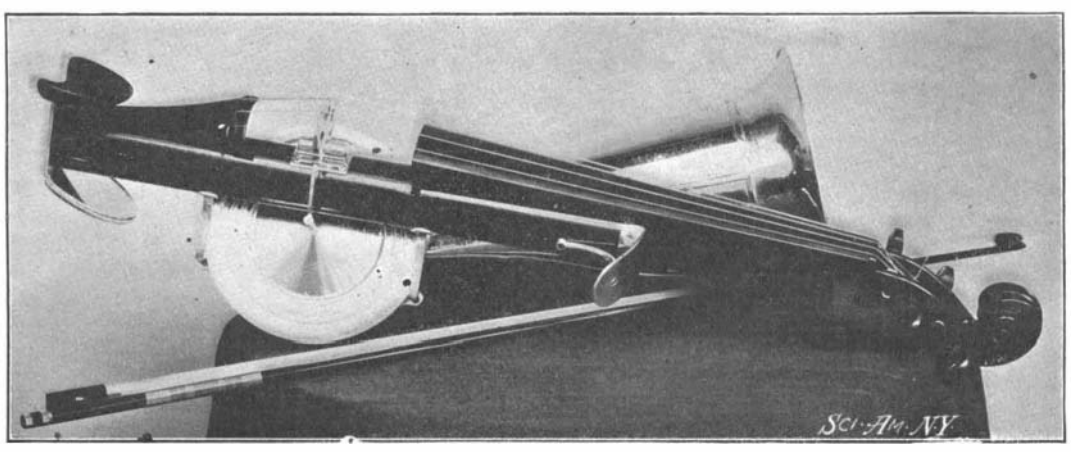


The Vibrating Diaphragm in Holder.



The Resonator or Trumpet.

Lever and Rocking Bridge.



THE STROH VIOLIN.

Attached to this holder is the trumpet or resonator. The body or main support of the instrument is in no way employed for sound purposes; it simply holds the various parts of the violin together and sustains the enormous tension of the strings when tuned. The disk or diaphragm which represents the belly of an ordinary violin, is perfectly free to vibrate, the result being that when the strings are set in motion by the bow, the bridge and rocking lever vibrate accordingly, and thus every vibration is transmitted to the diaphragm.

The diaphragm sets in motion the air contained in the resonator, the resonator augmenting and distributing the sound to the surrounding atmosphere.

London, England.

A Japanese Opinion of American Patents.

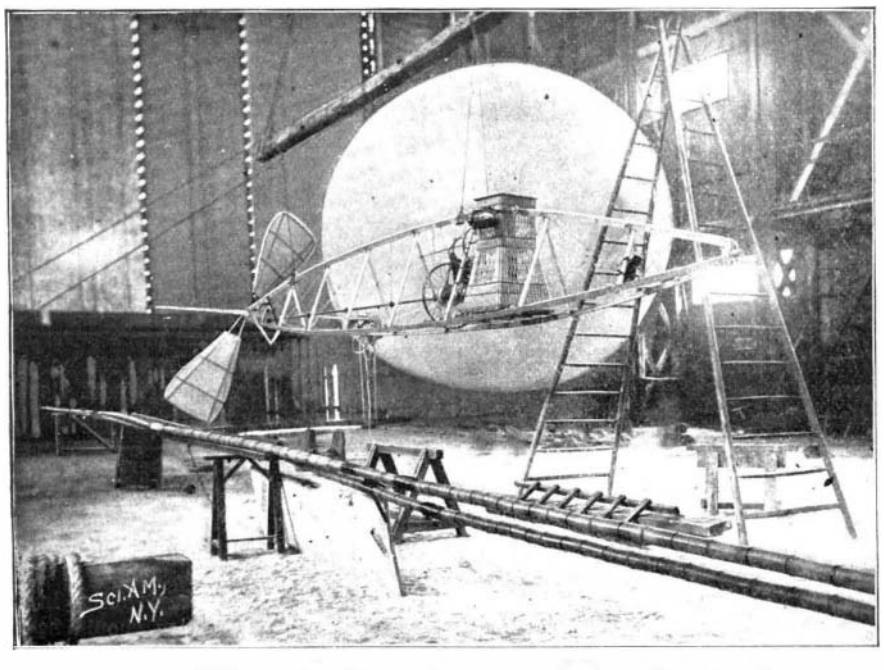
Some three years ago the Japanese government sent to this country a certain Mr. Takahashi to study our patent system. Mr. Takahashi pays a glowing and picturesque tribute to the American system. "We saw the United States not much more than one hundred years old," he said, "and we asked, 'What is it that makes the United States such a great nation?' We investigated, and found it was patents, and so we will have patents."

THE "SANTOS-DUMONT NO. 9."

BY THE PARIS CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

The new airship which Santos-Dumont is constructing at Paris will be the smallest that has yet been made. It is being built at the Lachambre aerostatic park, and is nearly finished, as will be noticed in the different views of the car and balloon. The latter has somewhat the form of an egg, with the large end placed foremost. Its length is about three times the diameter. The aeronaut is experimenting with this form of balloon, which differs considerably from its predecessors. The ovoid form will no doubt prove more stable than the cigar-shaped, and will give less pitching, although of course as high a speed cannot be attained with it. Only the light weight of the aeronaut, 110 pounds, permits of constructing such a small airship. The balloon is constructed of Japan silk and has a capacity of only 280 cubic yards. An upper valve is not made use of, but a tearing cord is employed instead, while below, in the rear, is a valve opened by a cord from the car. The balloon is provided with an interior air bag of 58 cubic yards capacity; this will be kept filled out by a ventilating fan. The total length of the balloon is but 45 feet, and its diameter, in the largest part, 18 feet. The balloon is to advance with the large end foremost, like the balloon "La France" with which the Renard brothers made their celebrated experiments in 1884. The photographs were taken while the balloon was being inflated with illuminating gas in order to fill it out in shape and allow the wires to be attached. On each side of the balloon a piece of fabric is firmly fastened to the canvas. To the eyelets of these strips will be attached, by connecting pieces, a series of steel piano wires which support the car. There will be 40 of these wires, and they have been carefully tested. Each wire, with a diameter of .032 inch, can support a weight of 190 pounds.

The framework or car is constructed on somewhat the same lines as before, and is suspended 7 feet below the balloon. It is quite small, and measures but 29 feet long and 3 feet high in the center. The framework, of pine, is made up of three main pieces of triangular section, bent into an arc of a circle, and braced



THE "SANTOS DUMONT NO. 9" IN COURSE OF CONSTRUCTION.

THE CAR OF THE "SANTOS-DUMONT NO. 9."